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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,759	02/16/2001	Ranjit Gharpurey	TI-31261	2970

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EXAMINER	
YUN, EUGENE	

ART UNIT	PAPER NUMBER
2682	

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/785,759	GHARPUREY, RANJIT	
	Examiner	Art Unit	
	Eugene Yun	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-14 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 29 March 2001 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morishige et al. (US 6,600,911) in view of Bednekoff et al. (US 6,603,810).

Referring to Claim 1, Morishige teaches a radio, comprising:

a duplexer 17 (fig. 2);

a transmitter section 22 (fig. 2) coupled to the duplexer, the transmitter section transmitting at a center frequency; and

a receiver section 21 (fig. 2) coupled to the transmitter section, the receiver section including a first down conversion section 4 (fig. 2) comprising first and second mixers (see the two mixers inside 4 of fig. 2).

Morishige does not teach mixers receiving a first local oscillator (LO) signal having a frequency equal to the center frequency of the transmitter section or a sub-harmonic thereof. Bednekoff teaches mixers receiving a first local oscillator (LO) signal 365 (fig. 3) having a frequency equal to the center frequency of the transmitter section or a sub-harmonic thereof (see col. 2, lines 44-47). Therefore, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Bednekoff to said method of Morishige in order to better reduce the interference in the radio.

Referring to Claim 8, Morishige teaches a method for minimizing the interference caused by the transmit signal produced by the transmit section 22 (fig. 2) on the receiver section 21 (fig. 2) of a frequency division duplexed (FDD) radio, the receiver section having a first down conversion section 4 (fig. 2), the method comprising the steps of:

providing a local oscillator (LO) signal 5 (fig. 2) to the first down conversion section of the receiver; and

filtering the output of the first down conversion section of the receiver 6 (fig. 2).

Morishige does not teach the LO signal having a frequency equal to the center frequency of the transmit signal or a sub-harmonic thereof. Bednekoff teaches the LO signal having a frequency equal to the center frequency of the transmit signal or a sub-harmonic thereof (see col. 2, lines 44-47). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Bednekoff to said method of Morishige in order to better reduce the interference in the radio.

Referring to Claim 2, Morishige also teaches the radio as a frequency domain duplexed (FDD) radio (fig. 2).

3. Claims 3-7 and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morishige and Bednekoff in view of Tolson et al. (US 6,625,436).

Referring to Claim 3, the combination of Bednekoff and Morishige does not teach a first high pass filter coupled to the output of the first mixer and a second high pass filter coupled to the output of the second mixer. Tolson teaches a first high pass filter 10 (fig. 1) coupled to the output of the first mixer and a second high pass filter 11 (fig. 1) coupled to the output of the second mixer. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Tolson to said method of Morishige in order to reduce the size of the radio while enhancing reliable operations.

Referring to Claim 9, the combination of Bednekoff and Morishige does not teach high pass filtering the output of the first down conversion section. Minami teaches high pass filtering the output of the first down conversion section (see 10 and 11 of fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Tolson to said method of Morishige in order to reduce the size of the radio while enhancing reliable operations.

Referring to Claims 5 and 11, Tolson also teaches cascaded single pole high pass filters (fig. 1).

Referring to Claim 6, the combination of Morishige and Bednekoff does not teach the high pass filters having an output and a first set of two mixers coupled to the output of the first high pass filter and a second set of two mixers coupled to the output of the second high pass filter. Tolson teaches the high pass filters10 and 11 (fig. 1) having an

output and a first set of two mixers 12 (fig. 1) coupled to the output of the first high pass filter and a second set of two mixers 12 (fig. 1) coupled to the output of the second high pass filter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Tolson to said method of Morishige in order to better enhance the performance of the radio.

Referring to Claims 4 and 10, Morishige also teaches integrated DC blocking capacitors (see col. 11, lines 12-17).

Referring to Claim 7, Tolson also teaches a first mixer of the first set of two mixers providing an in-phase component at an output and a second mixer of the first set of two mixers providing a quadrature component at an output (see col. 2, line 49) and further comprising:

a first adder 26 (fig. 7) having a first input for receiving the output of the second mixer of the first set of two mixers, and a second input for receiving the output of the first mixer of the second set of two mixers, said first adder having an output for providing an in-phase component base band signal; and

a second adder 27 (fig. 7) having a first input for receiving the output of the first mixer of the first set of two mixers, and a second input for receiving the output of the second mixer of the second set of two mixers, said second adder having an output for providing a quadrature component base band signal.

Referring to Claim 12, Tolson also teaches down converting the high pass filtered output using a second down conversion section 21 (fig. 1).

Referring to Claim 13, Tolson also teaches a first high pass filter 10 (fig. 1) coupled to the output of the first mixer, for passing frequencies including an intermediate frequency corresponding to a difference between the center frequency of the receiver section and the center frequency at which the transmitter section transmits; and

a second high pass filter 11 (fig. 1) coupled to the output of the second mixer, for passing frequencies including an intermediate frequency corresponding to a difference between the center frequency of the receiver section and the center frequency at which the transmitter section transmits.

Referring to Claim 14, Morishige teaches a method of operating a receiver 21 (fig. 2) in an FDD radio to remove, from a desired receive signal, interference caused by a transmitter 22 (fig. 2) transmitting at a transmit center frequency, the desired receive signal having a receive center frequency that is different from the transmit center frequency, comprising the steps of:

Mixing the receive signal with a local oscillator frequency 5 (fig. 2) to provide a down-converted receive signal 4 (fig. 2).

Morishige does not teach the local oscillator frequency equal to the transmit center frequency of a sub-harmonic thereof. Bednekoff teaches the local oscillator frequency equal to the transmit center frequency of a sub-harmonic thereof (see col. 2, lines 44-47). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Bednekoff to said method of Morishige in order to better reduce the interference in the radio. The combination of

Morishige and Bednekoff does not teach high pass filtering the down converted receive signal and converting the high pas filtered down converted receive signal to a baseband signal. Tolson teaches high pass filtering the down converted receive signal (see 10 and 11 of fig. 1) and converting the high pas filtered down converted receive signal to a baseband signal (see col. 4, lines 27-32). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Tolson to said method of Morishige in order to better enhance the performance of the radio.

Response to Arguments

4. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

5. Applicant's arguments filed 3/24/2004 have been fully considered but they are not persuasive.

The Tolson reference is a continuation-in-part of an application 09/413,725 filed on 10/7/1999, which is well before the filing date of the current application. The previous application also includes the limitations used to read on the applicant's claims. Therefore, the Tolson reference can be used.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Yun whose telephone number is (703) 305-2689. The examiner can normally be reached on 8:30am-5:30pm Alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (703) 308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eugene Yun
Examiner
Art Unit 2682

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